



R20 Regulation

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

Subject code:3P5FC

B.Tech V Semester Regular Examinations, January 2023

COMPILER DESIGN
(INFORMATION TECHNOLOGY)

Maximum Marks: 70

Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 What are language processors? Give some examples of them.
- 2 Differentiate between token and lexeme
- 3 What is ambiguous grammar? Give an example.
- 4 Give the properties of a context free grammar
- 5 State the three kinds of intermediate representation
- 6 Define SDD.
- 7 Give the limitations of static allocation
- 8 What are the characteristics of peephole optimization?
- 9 What is the advantage of Copy propagation?
- 10 How to represent loops in flow graphs?

Part-B

Answer All the following questions.

(10MX 5=50Marks)

- 11 What are various phases of a compiler? Explain the functions of each phase with its input and output for the example statement $A = B + C * D / F$.
10m
- OR
- 12 A. What is lexical Analysis? Explain the role of lexical analyzer in compiler. 5m
B. Describe the lexical errors and various error recovery strategies with suitable Examples 5m
- 13 A. What are LR parsers? Give their advantages. Explain characteristics of different types of LR parsers 6m
B. Compare and contrast top down parsing with bottom up parsing. 4m
- OR
- 14 Construct SLR parsing table for the grammar 10 m
$$E \rightarrow E + T \mid T$$
$$T \rightarrow TF \mid F$$
$$F \rightarrow F^* \mid a \mid b \mid \dagger$$
- 15 A. Define the terms quadruples, triples and indirect triples. Give their representation for the assignment statement $A = B * (C + D)$ by generating appropriate three address code 5m
B. Assuming suitable syntax directed definition, construct a syntax tree for the expression $a - 4 + e$ 5m

- OR
- 16 Write syntax directed translation to translate the following statements
i. if and ii. for statements
into three address code. 10m
- 17 A. Define activation records. Explain how it is related with runtime storage allocation. 5m
B. List out the primary structure preserving transformations on basic block. 5m
- OR
- 18 A. How to reduce fragmentation in heap memory? Explain. 5m
B. What is the purpose of next use information in code generation? Illustrate. 5m
- 19 A. What is data flow analysis? Give the properties of data flow. 5m
B. What are the principal sources of code optimization? Explain them. 5m
- OR
- 20 A. What is live variable analysis? Explain with a suitable example. 5m
B. A flow graph is useful for understanding code generation language? Justify your answer with an example 5m